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EXAMINER
HOANG, SON T

ART UNIT	PAPER NUMBER
2165	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
	10/559,386	SURAKKA ET AL.
Office Action Summary	Examiner	Art Unit	
	SON T. HOANG	2165	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>03</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 May 2008</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-31</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-31</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>06 December 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some * c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date <u>28 May 2008</u>.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____

DETAILED ACTION

Response to Amendment

1.   This communication is in response to the amendment filed on May 28,

2008.

Abstract has been amended.

Claims 1, **24-26** have been amended.

Claims 29-31 have been added.

Claims 1-31 are pending in this instant Office action.

Response to Arguments

2.   Applicant's arguments with respect to the claims have been fully

considered but they are not persuasive.

First, Applicant argues towards independent **claim 1** regarding the fact

that Toner, as modified by Murakami does not disclose updating a synonym set

associated with the value of the data field by adding the synonym candidate to

the synonym set, and if the synonym set was updated, said comparison to the

synonym set comprises comparison to the updated synonym set.

The Examiner concurs with Applicant's remark. However, it is noted that

the newly added limitations are anticipated by Treadgold et al. (*Pat. No.

7,231,343, filed on December 20, 2002; hereinafter Treadgold*). Accordingly,

Treadgold discloses synonyms are created through explicit learning. For

example, synonym learning on failure of the term 'sports" is described as

following:

> *User> Turn to sports*
>
> *System> Sorry, I do not understand. Please explain some terms or*
> *rephrase the command (terms not understood: 'sports')*
>
> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN'
([Column 5, Lines 25-35]). The newly learned synonym is then added to the
synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a
plurality of entries, with each entry having at least a "target" field and a
"synonym" field. The "target" field contains a token sequence of one or more
tokens that can be compared against user input tokens to identify a match. The
"synonym" field contains a token sequence of one or more tokens that can be
substituted for the token(s) in the input string that match the corresponding target
token(s), without changing the user's intent ([Column 10, Lines 5-13]).

Second, Applicant argues towards independent **claim 1** regarding the fact
that the both Toner and Murakami contain different fields of inventions and would
not be obvious to an ordinary person skilled in the art to combine Toner and
Murakami.

The Examiner respectfully disagrees with the above remark. Accordingly,
Toner teaches a technique to convert both strings to be matched into a
normalized representation of their original spelling forms of the corresponding
native language(s) ([Abstract] of Toner), and Murakami teaches a technique to
acquire a set of candidate synonyms similar to an input word for each user from

collective datasets ([Abstract] of Murakami). The techniques of Toner and

Murakami are both to develop synonyms from user's inputs and to expand the

retrieved results from both user's inputs and their corresponding synonyms.

Since, Toner and Murakami both have the same inventive field, an ordinary

person skilled in the art would have been easily combine them to yield the

invention of the instant application.

In view of the above, the Examiner contends that all limitations as recited

in the claims have been addressed in this instant Office action. Hence,

Applicant's arguments do not distinguish over the claimed invention over the prior

arts of record.

In light of the foregoing arguments, the 35 U.S.C. 103 rejections are

hereby sustained.

Information Disclosure Statement

3.   As required by **M.P.E.P. 609(C)**, the Applicant's submission of the

Information Disclosure Statement dated May 28, 2008 is acknowledged by the

Examiner and all cited references have been fully considered. As required by

M.P.E.P 609 C(2), a copy of the PTOL-1449 initialed and dated by the Examiner

is attached to the instant Office action.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

5.   **Claim 25** is rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Regarding **claim 25**, the claim refers to "*the method comprising the steps

of...*" on line 8 whilst there is no antecedent basis mentioned previously in the

claim for that method. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

7.   **Claims 24-25** are rejected under 35 U.S.C. 101 because the claimed

invention is directed to non-statutory subject matter.

Regarding **claims 24-25**, "*a computer program, embodied in a computer

readable record medium ...*" is being claimed. Even though Applicant has

amended in each claim the computer program to be embodied in a computer-

readable record medium, the main subject being directly claimed is still "*a

computer program*". A computer program can easily be interpreted by an ordinary

person skilled in the art as software per se and functional descriptive material

consisting of data structures and computer instructions, which impart functionality

when employed as a computer component.

Applicant is suggested to direct the claimed inventions in **claims 24-25** to

statutory subject matters as in the following example of "*a computer-readable

record medium having stored thereon computer-executable instructions for*

causing a computer to perform the method of …" It should be noted that "*a computer program, embodied/stored on a computer-readable record medium …"* is non-statutory whilst "*a computer-readable record medium having stored thereon a computer program ..."* is indeed statutory.

The claims above lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 U.S.C. 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When underlined functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)

Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable

as abstract ideas because "[t]he sole practical application of the algorithm was in

connection with the programming of a general purpose computer.")

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

9.   This application currently names joint inventors. In considering

patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

the subject matter of the various claims was commonly owned at the time any

inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a

later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35

U.S.C. 103(a).

10.   **Claims 1-7, 9-20, 24, 26-27, and 29-31** are rejected under 35 U.S.C.

103(a) as being unpatentable over Toner et al. (*Pub. No. US 2004/0024760, filed

on July 31, 2002; hereinafter Toner*) in view of Murakami et al. (*Pub. No. US

2004/0181759, filed on July, 19, 2002; hereinafter Murakami*), and further in view

of Treadgold et al. (*Pat. No. 7,231,343, filed on December 20, 2002; hereinafter

Treadgold*).

Regarding **claim 1**, Toner clearly shows and discloses a method of

processing a data record for finding a counterpart in a reference data set (*Figure*

1), the method comprising the steps of:

determining in the data record a value of a data field, the data field

representing an identifier (*Figure 3 shows an exemplary parsed name where in*

the inputted suspect name "Robert James Smith" is divided into three name

components 'Robert', 'James', and 'Smith', [0139]-[0140]),

determining if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion taking into account writing

variations, and if the predetermined synonym acceptance criterion is fulfilled,

associating the value of the data field and the synonym candidate as synonyms

(*In step 212, each Suspect component word is checked for synonyms by*

reference to the synonym table 302. For example, the invention would check

"Smith" against the entries in the synonym table 302. In this example, a match

exists in row 310. The invention updates the record 308 corresponding to this

match with a pointer (in this example, 12) of the matching row 310. Such an

operation is represented by steps 708 and 710 of Figure 7. Figure 7 also

illustrates an example form 712 of records 304, 306, and 308, [0113]. See further

Figures 2 & 6), and

searching for a counterpart for the data record by comparing to entries of

the reference data set the value of the data field and/or the synonym set after the

step of determining if the predetermined synonym acceptance criterion is fulfilled

(*In step 212, each Suspect component word is checked for synonyms by reference to the synonym table 302. For example, the invention would check "Smith" against the entries in the synonym table 302. In this example, a match exists in row 310. The invention updates the record 308 corresponding to this match with a pointer (in this example, 12) of the matching row 310. Such an operation is represented by steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of records 304, 306, and 308*, [0113]. See further Figures 2 & 6).

Murakami discloses:

determining from a set of predetermined identifier values at least one synonym candidate for the value of the data field (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set*, [0016]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Murakami with the teachings of Toner for the purpose of generating the candidate synonyms more efficiently by handling all abbreviations and peculiar terms including misspelled or misconverted words ([0015] of Murakami).

Toner, as modified by Murakami, does not explicitly disclose updating a synonym set associated with the value of the data field by adding the synonym candidate to the synonym set, and if the synonym set was updated, said comparison to the synonym set comprises comparison to the updated synonym set.

Treadgold discloses synonyms are created through explicit learning. For example, synonym learning on failure of the term 'sports" is described as following:

> *User> Turn to sports*
>
> *System> Sorry, I do not understand. Please explain some terms or rephrase the command (terms not understood: 'sports')*
>
> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN' ([Column 5, Lines 25-35]). The newly learned synonym is then added to the synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a plurality of entries, with each entry having at least a "target" field and a "synonym" field. The "target" field contains a token sequence of one or more tokens that can be compared against user input tokens to identify a match. The "synonym" field contains a token sequence of one or more tokens that can be substituted for the token(s) in the input string that match the corresponding target token(s), without changing the user's intent ([Column 10, Lines 5-13]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Treadgold with the teachings of Toner, as modified by Murakami for the purpose of enhancing the natural language interpretation by using synonyms, which can be learned from user input and written into a synonyms database wherein synonyms' selection(s) can be based on tokens identified in user input ([Abstract] of Treadgold).

Regarding **claim 2**, Murakami further discloses the at least one synonym candidate is determined using a candidate selection criterion depending at least on the value of the data field and on a synonym candidate (*input word is "battery" and words not included in the concept thereof are contained as candidates. "Cover" ranked fourth and "adapter," "bezel," "cheque," and "screw" ranked seventh and lower are noises*, [0055]).

Regarding **claim 3**, Murakami further discloses the candidate selection criterion takes into account how similar a synonym candidate and the value of the data field sound (*Degrees of Relatedness in Table 1*, [0054]).

Regarding **claim 4**, Murakami further discloses the candidate selection criterion specifies that at least a predetermined part of the value of the data field is identical to a predetermined part of a synonym candidate (*See Table 1 for a variety of spelling variant listed as synonym candidates. Inputted word is "battery, "batt" and "batterie" have the highest degrees of relatedness*, [0054]).

Regarding **claim 5**, Toner further discloses the candidate selection criterion takes into account also a further data field of the data record, said

further data field representing a second identifier (*Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith'. Each name component can be checked for synonyms*, [0139]-[0140]).

Regarding **claim 6**, Murakami further discloses at least one quality parameter is evaluated for a synonym candidate, the synonym acceptance criterion taking into account the at least one quality parameter (*Degrees of Relatedness in Table 1*, [0054]).

Regarding **claim 7**, Murakami further discloses a method, wherein at least one quality parameter takes into account <u>at least</u> one of the following quantities:

a number of changes required for converting the value of the data field to be identical to a synonym candidate;

a proportion of identical characters in the value of the data field and in a synonym candidate (*See Table 1 for a variety of spelling variant listed as synonym candidates. Inputted word is "battery, "batt" and "batterie" have the highest degrees of relatedness*, [0054]); and

a difference between the length of the value of the data field and the length of a synonym candidate.

Regarding **claim 9**, Murakami further discloses the proportion of identical characters takes into account the order of the characters (*If candidate synonyms are generated for each person, the candidate synonyms must be generated in*

the state where the unique notation used by the person is ranked first (i.e. has the highest degree of relatedness, [0044]).

Regarding **claim 10**, Murakami further discloses a first quality parameter is evaluated for each synonym candidate and at least a second quality parameter is evaluated at least for the synonym candidate(s) having the best first quality parameter (generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set, [0016]).

Regarding **claim 11**, Murakami further discloses the synonym acceptance criterion requires that there is only one synonym candidate having the best at least one quality parameter (Table 1 shows that the firstly ranked candidate "batt" has the highest degree of relatedness, [0055]).

Regarding **claim 12**, Murakami further discloses a method, wherein at least two quality parameters are evaluated for each synonym candidate and the synonym candidate acceptance criterion specifies a threshold for one of the at least two quality parameters, the threshold being dependent on a further one of the at least two quality parameters (generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in

the first set using the candidate synonyms contained in the second set, [0016]
Candidate synonyms of the first set can be narrowed with the candidate
synonyms of the second sets similarly to the aforementioned method. In this
case, the candidates which are ranked in places equal to or higher than a
threshold value place in the second sets are evaluated to be "absolute." The
candidate synonyms evaluated to be "absolute" are almost regarded as
synonyms, [0021]).

. Regarding **claim 13**, Toner further discloses a method, wherein the
search for the counterpart involves comparison of the value of the data field to a
synonym set relating to the identifier, members of said synonym set referring to
respective predetermined identifier values, and when the predetermined
synonym acceptance criterion is fulfilled, the value of the data field is added to
the synonym set as a member referring to the synonym associated with the value
of the data field before the search for the counterpart (*In step 212, each Suspect*
component word is checked for synonyms by reference to the synonym table
302. For example, the invention would check "Smith" against the entries in the
synonym table 302. In this example, a match exists in row 310. The invention
updates the record 308 corresponding to this match with a pointer (in this
example, 12) of the matching row 310. Such an operation is represented by
steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of
records 304, 306, and 308, [0113]. See further Figures 2 & 6).

Regarding **claim 14**, Murakami further discloses wherein determining the
at least one synonym candidate is discarded, if a predetermined discard criterion
is fulfilled (*the input word is "battery," and words not included in the concept
thereof are contained as candidates. "Cover" ranked fourth and "adapter,"
"bezel," "cheque," and "screw" ranked seventh and lower are noise,* [0055]).

Regarding **claim 15**, Toner further discloses the predetermined discard
criterion specifies that the value of the data field is identical to one of the
predetermined identifier values (*see the example of permutation process of name
components in Figure 6*).

Regarding **claim 16**, Toner further discloses the search for the counterpart
involves the synonym set and the predetermined discard criterion specifies that
the value of the data field is at least one of the following: one of the
predetermined identifier values (*see the example of permutation process of name
components in Figure 6*), and a member of the synonym set.

Regarding **claim 17**, Toner further discloses the predetermined discard
criterion takes into account a value of a second data field in the data record (*see
the example of permutation process of name components in Figure 6*).

Regarding **claim 18**, Toner further discloses information indicating the at
least one synonym associated with the value of the data field is added to the data
record (*the program checks each component word within the Suspect name and
determines whether or not it has any synonyms. If a word has synonyms, the row*

number in the synonym table 302 (Figure 3) is associated with it (i.e., the row

number is inserted in the same record as the word string, [0096]).

Regarding **claim 19**, Toner further discloses a method, wherein a copy of

the data record is made for each synonym associated with the value of the data

field (*Figure 6 shows the permutation result for the suspect name 'Dick Charles*

Robert', each component name associated with a synonym will be searched

against the data base for matching result).

Regarding **claim 20**, Toner further discloses a method, wherein the

identifier relates to a name of one of the following: a geographical entity, a

person and an organisation (*Abstract*).

Regarding **claim 24**, Toner further discloses a computer program

embodied in a computer-readable record medium, the computer-readable record

medium including program instructions for causing a computer to perform the

method for processing a data record for finding a counterpart in a reference data

set (*main program 102 of Figure 1*), the method comprising the steps of:

determining in the data record a value of a data field, the data field

representing an identifier (*Figure 3 shows an exemplary parsed name where in*

the inputted suspect name "Robert James Smith" is divided into three name

components 'Robert', 'James', and 'Smith', [0139]-[0140]),

determining if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion taking into account writing

variations, and if the predetermined synonym acceptance criterion is fulfilled,

associating the value of the data field and the synonym candidate as synonyms

(*In step 212, each Suspect component word is checked for synonyms by*

reference to the synonym table 302. For example, the invention would check

"Smith" against the entries in the synonym table 302. In this example, a match

exists in row 310. The invention updates the record 308 corresponding to this

match with a pointer (in this example, 12) of the matching row 310. Such an

operation is represented by steps 708 and 710 of Figure 7. Figure 7 also

illustrates an example form 712 of records 304, 306, and 308, [0113]. See further

Figures 2 & 6), and

searching for a counterpart for the data record by comparing to entries of

the reference data set the value of the data field and/or the synonym set after the

step of determining if the predetermined synonym acceptance criterion is fulfilled

(*In step 212, each Suspect component word is checked for synonyms by*

reference to the synonym table 302. For example, the invention would check

"Smith" against the entries in the synonym table 302. In this example, a match

exists in row 310. The invention updates the record 308 corresponding to this

match with a pointer (in this example, 12) of the matching row 310. Such an

operation is represented by steps 708 and 710 of Figure 7. Figure 7 also

illustrates an example form 712 of records 304, 306, and 308, [0113]. See further

Figures 2 & 6).

Murakami discloses:

determining from a set of predetermined identifier values at least one

synonym candidate for the value of the data field (*generating a first set of*

candidate synonyms for the object word, based on whole of the document data

and generating at least one second set of candidate synonyms for the object

word, based on at least one part of the document data and narrowing the

candidate synonyms contained in the first set using the candidate synonyms

contained in the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Toner, as modified by Murakami, does not explicitly disclose updating a

synonym set associated with the value of the data field by adding the synonym

candidate to the synonym set, and if the synonym set was updated, said

comparison to the synonym set comprises comparison to the updated synonym

set.

Treadgold discloses synonyms are created through explicit learning. For

example, synonym learning on failure of the term 'sports" is described as

following:

User> Turn to sports

> *System> Sorry, I do not understand. Please explain some terms or*
> *rephrase the command (terms not understood: 'sports')*

> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN'
([Column 5, Lines 25-35]). The newly learned synonym is then added to the
synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a
plurality of entries, with each entry having at least a "target" field and a
"synonym" field. The "target" field contains a token sequence of one or more
tokens that can be compared against user input tokens to identify a match. The
"synonym" field contains a token sequence of one or more tokens that can be
substituted for the token(s) in the input string that match the corresponding target
token(s), without changing the user's intent ([Column 10, Lines 5-13]).

It would have been obvious to a person with ordinary skills in the art at the
time of the invention to incorporate the teachings of Treadgold with the teachings
of Toner, as modified by Murakami for the purpose of enhancing the natural
language interpretation by using synonyms, which can be learned from user input
and written into a synonyms database wherein synonyms' selection(s) can be
based on tokens identified in user input ([Abstract] of Treadgold).

Regarding **claim 26**, Toner clearly shows and discloses a data processing
system for processing data records for finding counterparts in a reference data
set (*Figure 9*), the system comprising:

means (*main program 102 of Figure 1*) for receiving data records (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names*, [0094]),

means for storing the reference data set (*database entry*, [0062]),

means for storing predetermined identifier values for an identifier (*Figure 3 shows an exemplary synonym table*),

means for determining (*main program 102 of Figure 1*) in the data records values of a data field, the data field representing the identifier (*Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith'*, [0139]-[0140]),

means for associating (*main program 102 of Figure 1*) values of the data field and respective predetermined identifier values as synonyms (*Name substitution matching, where component words of the Suspect name are checked against a synonym table and are replaced with their respective synonyms*, [0088]),

means for searching (*main program 102 of Figure 1*) counterparts in the reference data set for the data records by comparing to entries of the reference data set values of data fields and/or said synonyms set (*In step 212, each Suspect component word is checked for synonyms by reference to the synonym*

table 302. For example, the invention would check "Smith" against the entries in

the synonym table 302. In this example, a match exists in row 310. The invention

updates the record 308 corresponding to this match with a pointer (in this

example, 12) of the matching row 310. Such an operation is represented by

steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of

records 304, 306, and 308, [0113]. See further Figures 2 & 6).

means to determine (*main program 102 of Figure 1*) if a synonym

candidate and the value of the data field fulfill a predetermined synonym

acceptance criterion taking into account writing variations, and if the

predetermined synonym acceptance criterion is fulfilled, to associate the value of

the data field and the synonym candidate as synonyms (*In step 212, each*

Suspect component word is checked for synonyms by reference to the synonym

table 302. For example, the invention would check "Smith" against the entries in

the synonym table 302. In this example, a match exists in row 310. The invention

updates the record 308 corresponding to this match with a pointer (in this

example, 12) of the matching row 310. Such an operation is represented by

steps 708 and 710 of Figure 7. Figure. 7 also illustrates an example form 712 of

records 304, 306, and 308, [0113]. See further Figures 2 & 6).

Murakami discloses:

determine from the predetermined identifier values at least one synonym

candidate for a value of the data field (*generating a first set of candidate*

synonyms for the object word, based on whole of the document data and

generating at least one second set of candidate synonyms for the object word,

based on at least one part of the document data and narrowing the candidate

synonyms contained in the first set using the candidate synonyms contained in

the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Toner, as modified by Murakami, does not explicitly disclose updating a

synonym set associated with the value of the data field by adding the synonym

candidate to the synonym set, and if the synonym set was updated, said

comparison to the synonym set comprises comparison to the updated synonym

set.

Treadgold discloses synonyms are created through explicit learning. For

example, synonym learning on failure of the term 'sports" is described as

following:

> *User> Turn to sports*
>
> *System> Sorry, I do not understand. Please explain some terms or rephrase the command (terms not understood: 'sports')*
>
> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN' ([Column 5, Lines 25-35]). The newly learned synonym is then added to the synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a plurality of entries, with each entry having at least a "target" field and a "synonym" field. The "target" field contains a token sequence of one or more tokens that can be compared against user input tokens to identify a match. The "synonym" field contains a token sequence of one or more tokens that can be substituted for the token(s) in the input string that match the corresponding target token(s), without changing the user's intent ([Column 10, Lines 5-13]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Treadgold with the teachings of Toner, as modified by Murakami for the purpose of enhancing the natural language interpretation by using synonyms, which can be learned from user input and written into a synonyms database wherein synonyms' selection(s) can be based on tokens identified in user input ([Abstract] of Treadgold).

Regarding **claim 27**, Toner further discloses:

means for storing a synonym set, members of said synonym set referring to respective predetermined identifier values (*Figure 3 of Toner shows an exemplary synonym table, wherein each member of the synonym set refers to the sought component name*),

wherein the means for associating values of the data field and respective predetermined identifier values as synonyms are configured to add to the synonym set a member referring to the synonym associated with the value of the data field before activation of the means for searching counterparts (*In step 212, each Suspect component word is checked for synonyms by reference to the synonym table 302. For example, the invention would check "Smith" against the entries in the synonym table 302. In this example, a match exists in row 310. The invention updates the record 308 corresponding to this match with a pointer (in this example, 12) of the matching row 310. Such an operation is represented by steps 708 and 710 of Figure 7. Figure. 7 also illustrates an example form 712 of records 304, 306, and 308,* [0113]. See further Figures 2 & 6).

Regarding **claim 29**, Toner clearly shows and discloses a data processing apparatus (*Figure 9*), comprising at least one processor configured to process data records for finding counterparts in a reference data set, to determine in the data records values of a data field, the data field representing an identifier (*Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith',* [0139]-[0140]), to associate values of the data field and respective predetermined identifier values as synonyms (*Name substitution matching, where component words of the Suspect name are checked against a synonym table and are replaced with their respective synonyms,* [0088]), to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion taking into account writing variations, and if the

predetermined synonym acceptance criterion is fulfilled, to associate the value of

the data field and the synonym candidate as synonyms (*In step 212, each*

Suspect component word is checked for synonyms by reference to the synonym

table 302. For example, the invention would check "Smith" against the entries in

the synonym table 302. In this example, a match exists in row 310. The invention

updates the record 308 corresponding to this match with a pointer (in this

example, 12) of the matching row 310. Such an operation is represented by

steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of

records 304, 306, and 308, [0113]. See further Figures 2 & 6),

Murakami discloses:

determine from the predetermined identifier values at least one synonym

candidate for a value of the data field (*generating a first set of candidate*

synonyms for the object word, based on whole of the document data and

generating at least one second set of candidate synonyms for the object word,

based on at least one part of the document data and narrowing the candidate

synonyms contained in the first set using the candidate synonyms contained in

the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Toner, as modified by Murakami, does not explicitly disclose updating a synonym set associated with the value of the data field by adding the synonym candidate to the synonym set, and if the synonym set was updated, said comparison to the synonym set comprises comparison to the updated synonym set.

Treadgold discloses synonyms are created through explicit learning. For example, synonym learning on failure of the term 'sports" is described as following:

> *User> Turn to sports*
>
> *System> Sorry, I do not understand. Please explain some terms or rephrase the command (terms not understood: 'sports')*
>
> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN' ([Column 5, Lines 25-35]). The newly learned synonym is then added to the synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a plurality of entries, with each entry having at least a "target" field and a "synonym" field. The "target" field contains a token sequence of one or more tokens that can be compared against user input tokens to identify a match. The "synonym" field contains a token sequence of one or more tokens that can be substituted for the token(s) in the input string that match the corresponding target token(s), without changing the user's intent ([Column 10, Lines 5-13]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Treadgold with the teachings of Toner, as modified by Murakami for the purpose of enhancing the natural language interpretation by using synonyms, which can be learned from user input and written into a synonyms database wherein synonyms' selection(s) can be based on tokens identified in user input ([Abstract] of Treadgold).

Regarding **claim 30**, Toner further discloses members of said synonym set referring to respective predetermined identifier values, and wherein the at least one processor is configured to add to the synonym set stored in the at least one memory a member referring to the synonym associated with the value of the data field before activation of the search for counterparts (*In step 212, each Suspect component word is checked for synonyms by reference to the synonym table 302. For example, the invention would check "Smith" against the entries in the synonym table 302. In this example, a match exists in row 310. The invention updates the record 308 corresponding to this match with a pointer (in this example, 12) of the matching row 310. Such an operation is represented by steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of records 304, 306, and 308*, [0113]. See further Figures 2 & 6).

Regarding **claim 31**, Tone clearly discloses a data processing apparatus configured to determine if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion taking into account writing variations (*In step 212, each Suspect component word is checked for synonyms*

by reference to the synonym table 302. For example, the invention would check

"Smith" against the entries in the synonym table 302. In this example, a match

exists in row 310. The invention updates the record 308 corresponding to this

match with a pointer (in this example, 12) of the matching row 310. Such an

operation is represented by steps 708 and 710 of Figure 7. Figure 7 also

illustrates an example form 712 of records 304, 306, and 308, [0113]. See further

Figures 2 & 6),

Murakami discloses:

determining from a set of predetermined identifier values at least one

synonym candidate for the value of the data field (*generating a first set of*

candidate synonyms for the object word, based on whole of the document data

and generating at least one second set of candidate synonyms for the object

word, based on at least one part of the document data and narrowing the

candidate synonyms contained in the first set using the candidate synonyms

contained in the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Toner, as modified by Murakami, does not explicitly disclose updating a

synonym set associated with the value of the data field by adding the synonym

candidate to the synonym set, and if the synonym set was updated, said

comparison to the synonym set comprises comparison to the updated synonym

set.

Treadgold discloses synonyms are created through explicit learning. For

example, synonym learning on failure of the term 'sports" is described as

following:

> *User> Turn to sports*
>
> *System> Sorry, I do not understand. Please explain some terms or*
> *rephrase the command (terms not understood: 'sports')*
>
> *User> Sports is ESPN*

The system turns to ESPN and learns the synonym 'sports' is 'ESPN'

([Column 5, Lines 25-35]). The newly learned synonym is then added to the

synonyms database in the synonyms unit 110 ([Column 8, Lines 6-9]).

Treadgold further discloses the synonyms database 216 contains a

plurality of entries, with each entry having at least a "target" field and a

"synonym" field. The "target" field contains a token sequence of one or more

tokens that can be compared against user input tokens to identify a match. The

"synonym" field contains a token sequence of one or more tokens that can be

substituted for the token(s) in the input string that match the corresponding target

token(s), without changing the user's intent ([Column 10, Lines 5-13]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Treadgold with the teachings

of Toner, as modified by Murakami for the purpose of enhancing the natural

language interpretation by using synonyms, which can be learned from user input

and written into a synonyms database wherein synonyms' selection(s) can be

based on tokens identified in user input ([Abstract] of Treadgold).

11.   **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over

Toner et al. (*Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter*

Toner) in view of Murakami et al. (*Pub. No. US 2004/0181759, filed on July, 19,*

2002; hereinafter Murakami), further in view of Treadgold et al. (*Pat. No.*

7,231,343, filed on December 20, 2002; hereinafter Treadgold), and further in

view of Bellany et al. (*Pub. No. US 2002/0078024, filed on October 12, 2001;*

hereinafter Bellany).

Regarding **claim 8**, Toner, as modified by Murakami and Treadgold, does

not disclose the limitation of this instant claim.

Bellany discloses the number of changes required for converting the value

of the data field to be identical to a synonym candidate is calculated using the

Levenshtein distance (*on not finding any entries in the dictionary identical to the*

input data, the processor may then search allowing for one error at first, and if

that search fails, performing a further search, allowing for two errors, and so on.

A single error may be counted if the search term and the dictionary entry differ by

one character being deleted, added or replaced with a different character. The

quality of correspondence between two terms may be judged by calculating the "

Levenshtein" distance between the two strings, [0044]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Bellany with the teachings of Toner, as modified by Murakami and Treadgold, for the purpose of retrieving a desired postal address from a plurality of postal addresses by searching a dictionary for entries in the dictionary corresponding to the searched terms ([Abstract] of Bellany).

12.   **Claims 21-23, 25**, and **28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Toner et al. (*Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter Toner*) in view of Murakami et al. (*Pub. No. US 2004/0181759, filed on July, 19, 2002; hereinafter Murakami*).

Regarding **claim 21**, Toner clearly shows and discloses a method of processing a synonym set for searching counterparts in a reference data set for data records (*Figure 1*), a data record containing a data field representing an identifier (*Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith', [0139]-[0140]*), members of the synonym set being first identifier values and referring to respective second identifier values, the second identifier values being predetermined identifier values (*Figure 6 shows the process of computing permutations for words that have synonyms in the suspect name "Dick Charles Robert". The suspect name is divided into three name components, each is associated with a synonym (if the synonym exists). This process results in nine possible permutations using the synonym table in Figure 3*), and said searching for a counterpart involving comparison of a value of

the data field to the synonym set (*Name substitution matching, where component words of the Suspect name are checked against a synonym table and are replaced with their respective synonyms*, [0088]),

if the value of the data field and a synonym candidate fulfill a predetermined synonym acceptance criterion taking into account writing variations, adding before searching a counterpart a data record the value of the data field to the synonym set as a member referring to the synonym candidate (*In step 212, each Suspect component word is checked for synonyms by reference to the synonym table 302. For example, the invention would check "Smith" against the entries in the synonym table 302. In this example, a match exists in row 310. The invention updates the record 308 corresponding to this match with a pointer (in this example, 12) of the matching row 310. Such an operation is represented by steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of records 304, 306, and 308,* [0113]. See further Figures 2 & 6).

Murakami discloses:

determining among the predetermined identifier values at least one synonym candidate relating to the value of the data field in the data record (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data*

and narrowing the candidate synonyms contained in the first set using the

candidate synonyms contained in the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Regarding **claim 22**, Toner further discloses a method, wherein the

synonym set is empty before adding the value of the data field to the synonym

set (*See Synonym Table of Figure 3*).

Regarding **claim 23**, Toner further discloses a method, wherein the

synonym set contains at least one member before adding the value of the data

field to the synonym set (*See Synonym Table of Figure 3*).

Regarding **claim 25**, Toner further discloses a computer program

embodied on a computer-readable record medium, the computer-readable record

medium including program instructions of processing a synonym set for

searching counterparts in a reference data set for data records (*Figure 9*), a data

record containing a data field representing an identifier (*Figure 3 shows an*

exemplary parsed name where in the inputted suspect name "Robert James

Smith" is divided into three name components 'Robert', 'James', and 'Smith',

[0139]-[0140]), members of the synonym set being first identifier values and

referring to respective second identifier values, the second identifier values being

predetermined identifier values (*Figure 6 shows the process of computing*

permutations for words that have synonyms in the suspect name "Dick Charles

Robert". The suspect name is divided into three name components, each is

associated with a synonym (if the synonym exists). This process results in nine

possible permutations using the synonym table in Figure 3), and said searching

for a counterpart involving comparison of a value of the data field to the synonym

set (*Name substitution matching, where component words of the Suspect name*

are checked against a synonym table and are replaced with their respective

synonyms, [0088]), and, if the value of the data field and a synonym candidate

fulfill a predetermined synonym acceptance criterion taking into account writing

variations, adding before searching a counterpart for a data record the value of

the data field to the synonym set as a member referring to the synonym

candidate (*In step 212, each Suspect component word is checked for synonyms*

by reference to the synonym table 302. For example, the invention would check

"Smith" against the entries in the synonym table 302. In this example, a match

exists in row 310. The invention updates the record 308 corresponding to this

match with a pointer (in this example, 12) of the matching row 310. Such an

operation is represented by steps 708 and 710 of Figure 7. Figure 7 also

illustrates an example form 712 of records 304, 306, and 308, [0113]. See further

Figures 2 & 6), and said searching for a counterpart involving comparison of a

value of the data field to the synonym set (*Name substitution matching, where*

component words of the Suspect name are checked against a synonym table

and are replaced with their respective synonyms, [0088]).

Murakami discloses:

determining among the predetermined identifier values at least one synonym candidate relating to the value of the data field in the data record (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set*, [0016]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of Murakami with the teachings of Toner for the purpose of generating the candidate synonyms more efficiently by handling all abbreviations and peculiar terms including misspelled or misconverted words ([0015] of Murakami).

Regarding **claim 28**, Toner clearly shows and discloses a data processing system for processing a synonym set for searching counterparts in a reference data set for data records (*Figure 9*), a data record comprising a data field representing an identifier, members of the synonym set being first identifier values and referring to respective second identifier values, said second identifier values being predetermined identifier values, and said searching involving comparing a value of the data field to the synonym set (*name components in Figure 3*), the system comprising :

means for storing the synonym set (*Figure 3 of Toner shows an exemplary synonym table, wherein each member of the synonym set refers to the sought component name*),

means for storing predetermined identifier values for the identifier (*name components in Figure 3*),

means (*main program 102 of Figure 1*) for receiving data records (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names,* [0094]),

means (*main program 102 of Figure 1*) for determining in the data records values of the data field (*Figure 3 shows an exemplary parsed name where in the inputted suspect name "Robert James Smith" is divided into three name components 'Robert', 'James', and 'Smith',* [0139]-[0140]), and

means (*main program 102 of Figure 1*) for adding to the synonym set a value of the data field and respective predetermined identifier values associated as synonyms before searching counterparts in the reference data set if a synonym candidate and the value of the data field fulfill a predetermined synonym acceptance criterion taking into account writing variations (*In step 212, each Suspect component word is checked for synonyms by reference to the synonym table 302. For example, the invention would check "Smith" against the entries in the synonym table 302. In this example, a match exists in row 310. The invention updates the record 308 corresponding to this match with a pointer (in*

this example, 12) of the matching row 310. Such an operation is represented by

steps 708 and 710 of Figure 7. Figure 7 also illustrates an example form 712 of

records 304, 306, and 308, [0113]. See further Figures 2 & 6).

Murakami discloses:

said means configured to determine from the predetermined identifier

values at least one synonym candidate for a value of the data field (*generating a*

first set of candidate synonyms for the object word, based on whole of the

document data and generating at least one second set of candidate synonyms

for the object word, based on at least one part of the document data and

narrowing the candidate synonyms contained in the first set using the candidate

synonyms contained in the second set, [0016]).

It would have been obvious to a person with ordinary skills in the art at the

time of the invention to incorporate the teachings of Murakami with the teachings

of Toner for the purpose of generating the candidate synonyms more efficiently

by handling all abbreviations and peculiar terms including misspelled or

misconverted words ([0015] of Murakami).

Conclusion

13.   **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Contact Information

14.   Any inquiry concerning this communication or earlier communications from

the Examiner should be directed to Son T. Hoang whose telephone number is

(571) 270-1752. The Examiner can normally be reached on Monday – Friday

(7:00 AM – 4:00 PM).

If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, Christian Chace can be reached on (571) 272-4190. The

fax phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through Private

PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

/Son T Hoang/
Examiner, Art Unit 2165
August 6, 2008

/S. P./

Primary Examiner, Art Unit 2164

/Christian P. Chace/

Supervisory Patent Examiner, Art Unit 2165